

Appln. No. 09/823,134

Amendment dated March 1, 2004

Reply to Office Action of October 29, 2003

Amendments to the Claims:

Please cancel claims 1-5 and add new claims 18-24 as follows. The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-5 (Cancelled).

Claim 6 (Withdrawn). A recording medium controlling apparatus for reading/writing data from/to a recording data area formed on a non-circular recording medium while rotating the recording medium, said apparatus comprising:

5 detecting means for detecting a discontinuity in the recording tracks due to the non-circularity of the recording medium; and

 combining means for combining data on recording data areas present before and after the discontinuity in a rotating
10 direction of the recording medium and detected by said detecting means so that these data continue.

Claim 7 (Withdrawn). The recording medium controlling apparatus according to claim 6, wherein said detecting means

comprises optical detecting means for detecting the discontinuity optically,

5 Claim 8 (Withdrawn). The recording medium controlling apparatus according to claim 6, wherein said detecting means comprises light cutoff detecting means for detecting the discontinuity depending on if light applied to the recording medium during rotation of the recording medium is cut off or not.

5 Claim 9 (Withdrawn). The recording medium controlling apparatus according to claim 6, wherein said detecting means comprises position information detecting means for detecting the discontinuity based on information on a position of the discontinuity recorded on the recording medium or in an access control driver.

Claim 10 (Withdrawn). A recording medium controlling apparatus for reading recorded data from a recording section formed on a non-circular recording medium while rotating the recording medium, said apparatus comprising:

5 detecting means for detecting a non-circular area recording section due to a non-circular shape of the recording medium; and

controlling means for combining data on portions of the
non-circular recording data area detected by said detecting means
and present before and after the non-circular area during
10 rotation of the recording medium.

Claim 11 (Withdrawn). A recording medium controlling
apparatus for reading recorded data from a recording section
formed on a non-circular recording medium while rotating the
recording medium, said apparatus comprising:

detecting means for detecting effective data reading areas
and an ineffective data reading area between the effective data
reading areas present due to the shape of the recording medium
when data is read from the recording areas; and

data combining means, responsive to the data reading being
10 completed, for deleting data in the ineffective data reading area
detected by said detecting means, and for combining the data
recorded in the effective data recording areas.

Claim 12 (Withdrawn). A non-circular recording medium
controlling apparatus for reading/writing data from/to a
non-circular recording medium on which a read only area where
data is recorded beforehand and an additionally writing area

5 where data is additionally writable are provided, said apparatus comprising:

driving means for rotating the non-circular recording medium;

10 optical reading means for irradiating a recording area that includes the read only area and the additionally writing area on the non-circular recording medium, rotated by said driving means, with light and for acquiring data recorded on the recording area from light reflected by the recording area;

15 irradiating means for irradiating with light a predetermined position on the non-circular recording medium;

detecting means for detecting a reflection of the light, irradiated by said irradiating means, from the predetermined position on the non-circular recording medium; and

20 control means for controlling the irradiation of the light by said optical reading means based on a result of the detection by said detecting means.

Claim 13 (Withdrawn). The non-circular recording medium controlling apparatus according to claim 12, further comprising:

additionally writing means for irradiating the additionally writing area of the non-circular recording medium with light to

Appln. No. 09/823,134
Amendment dated March 1, 2004
Reply to Office Action of October 29, 2003

5 additionally write data to the additionally writing area; and
wherein:

said control means controls the irradiation of light by
said additionally writing means based on a result of the
detection by said detecting means.

Claim 14 (Withdrawn). A non-circular recording medium
controlling apparatus for reading/writing data from/to a
non-circular recording medium on which a read only area where
data is recorded beforehand and an additionally writing area
5 where data is additionally writable are provided, said apparatus
comprising:

driving means for rotating the non-circular recording
medium;

10 irradiating means for irradiating with light a data
recording track that involves the read only area and the
additionally writing area on the non-circular recording medium
being rotated;

sensing means for sensing a reflection of the light,
irradiated by said irradiating means, from the data recording
15 track on the non-circular recording medium;

track shape detecting means for detecting the shape of the data recording track based on a result of the sensing by said sensing means; and

reading means for reading data recorded on the data recording track based on a result of the detection by said track shape detecting means.

Claim 15 (Withdrawn). The non-circular recording medium controlling apparatus according to claim 14, wherein:

said reading means comprises:

optical reading means for irradiating with light a predetermined position on the non-circular recording medium and for acquiring data from the reflection of the light from the predetermined position; and

read controlling means, responsive to said track shape detecting means detecting that the data recording track has the shape of a circle that in turn has a discontinuity, for stopping operation of said optical reading means on the discontinuity and for storing data from a portion of the data recording track involving the remainder of the circle acquired by said optical reading means.

Claim 16 (Withdrawn). A method of controlling a non-circular recording medium that comprises a read only area where data is stored beforehand and an additionally writing area where data is writable additionally, the method comprising the

5 steps of:

rotating the non-circular recording medium;

irradiating with light a recording area of the non-circular recording medium being rotated in said rotating step;

sensing a reflection of the irradiated light from the

10 non-circular recording medium;

controlling the irradiation of light on the recording area of the non-circular recording medium based on a result of the sensing of the reflection of the irradiated light; and

acquiring data recorded in the recording area from the

15 reflection of the light with which the recording medium was irradiated in the irradiating step.

Claim 17 (Withdrawn). A method of controlling a non-circular recording medium that comprises an optically readable recording area that, in turn, comprises a spiral data recording track or a plurality of concentric data recording

5 tracks, the method comprising the steps of:

rotating the non-circular recording medium;

irradiating with light one of the data recording tracks on the non-circular recording medium being rotated in said rotating step;

10 determining the shape of the data recording track based on a result of the sensing in said sensing step;

sensing a reflection from that data recording track; and

reading data recorded on the recording track based on a result of the determination in said determining step.

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Claim 18 (New). A recording medium controlling apparatus for reading/writing data from/to a recording data area as a recording track formed on a non-circular recording medium while rotating the recording medium, said apparatus comprising:

5 detecting means for detecting a discontinuity in the recording track due to the non-circularity of the recording medium during rotation of the recording medium; and

combining means for combining data present on recording data area portions present before and after the discontinuity in
10 a rotating direction of the recording medium and detected by said detecting means so that these data continue.

Appln. No. 09/823,134
Amendment dated March 1, 2004
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Claim 19 (New). The non-circular recording medium according to claim 18, wherein the recording medium has a non-circular shape such as a triangle, square, polygon, ellipse or star.


Claim 20 (New). The recording medium controlling apparatus according to claim 18, wherein said detecting means comprises optical detecting means for optically detecting the discontinuity in the recording track.

Claim 21 (New). The recording medium controlling apparatus according to claim 18, wherein said detecting means comprises light-intercept detecting means for detecting the discontinuity depending on whether or not light illuminating the recording
5 medium during rotation of the recording medium is intercepted or not.

Claim 22 (New). A recording medium controlling apparatus for reading recorded data from a recording section formed on a non-circular recording medium while rotating the recording medium, said apparatus comprising:

5 detecting means for detecting a non-circular data storage area present on the recording medium due to the non-circularity of the recording medium during its rotation; and

controlling means for combining data on the recording section portions present before and after the non-circular data storage area detected by said detecting means.

 Claim 23 (New). A recording medium controlling apparatus for reading recorded data from a recording section formed on a non-circular recording medium while rotating the recording medium, said apparatus comprising:

15 detecting means for detecting possible effective data reading areas and ineffective data reading areas present on the recording medium due to its non-circular shape when data is read from the recording section by rotating the recording medium; and

20 data combining means, responsive to the data reading being completed, for deleting data present in the ineffective data reading area detected by said detecting means, and for combining the data recorded in the detected effective data reading areas present directly before and after the ineffective data reading area, if any.

Appln. No. 09/823,134
Amendment dated March 1, 2004
Reply to Office Action of October 29, 2003

Claim 24 (New). A recording medium controlling method for reading/writing data from/to a recording data area as a recording track formed on a non-circular recording medium while rotating the recording medium, said method comprising the steps of:

5 detecting a discontinuity in the recording track due to the non-circularity of the recording medium during rotation of the recording medium; and

ps combining data present on recording data area portions present before and after the discontinuity in a rotating
10 direction of the recording medium and detected in the detecting step so that these data continue.
